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EXAMINER

FETZNER, TIFFANY A

ART UNIT	PAPER NUMBER
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2831

MAIL DATE	DELIVERY MODE
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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/527,592	Applicant(s) SODICKSON ET AL.	
	Examiner Tiffany A. Fetzner	Art Unit 2831	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 3-32, and 61-90 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3-32 and 61-90 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 March 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED Second Non final ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Response to Arguments

2. Applicant's arguments filed July 20, 2009 have been fully considered but they are not persuasive. Applicant's arguments with respect to the remaining pending claims 1, 3-32, 61, and 62-90 have been considered but are moot in view of the rejections noted herein since claims 1, 3-32, 61, and 62-90 now meet the statutory claim requirements based on *In re Bilski*, 545 F.3d 943, 88 USPQ2d 1385 (Fed Cir. 2008) but are also rejectable, because they are now statutory claims under **35 U.S.C. 102(e)** as being anticipated by **Mills** US patent **6,477,398 B1** issued November 5th 2002, filed November 12th 1998.

Claim Objections

3. **Claims 68, 69, 71-90** are objected to because of the following informalities:

A) Applicant canceled **claim 62** in the **December 10, 2008 amendment and response**, however applicant failed to correct the dependency chain of the subsequent dependent claims 63-90 which each depend in some way from **canceled claim 62**. Therefore dependency corrections are required with respect to each of **claims 68, 69, 71-90** appropriate correction is required.

B) Dependent **Claim 68** appears as if it should depend from **independent claim 61**, since **claim 62 is a canceled** claim and no claims may depend from canceled claim.

Canceled Claims

4. **Claims 2, 33-60, 62, and 91-119** are canceled as per the July 20th 2009 list of claims, in the July 20, 2009 amendment and response.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. **Amended Claims 1, 3-32, 61, and 63-90** are rejected under **35 U.S.C. 102(e)** as being anticipated by **Mills** US patent **6,477,398 B1** issued November 5th 2002, filed November 12th 1998.

7. With respect to **Claim 1 Mills**, shows with respect to figures 1 through 13 and their accompanying description within the Mills disclosure “A method of determining one or more properties” (i.e. such as magnetic susceptibility, external or internal resonant frequency shift, Larmor frequency shift, etc.) “of a body” (i.e. of a patient or object), “positioned proximate an array of coils” (i.e. an array of miniature RF antennas / detectors) [See col. 4 lines 11-25; col. 2 lines 43-48] “having a plurality of resonant coils” [See figures 1a, 1b, 8, 13 and accompanying description], “each having one or more resonant properties including a resonant frequency at which the respective coil was configured to resonate” (i.e. a Larmor frequency) [See col. 5 lines 4-17], “the method comprising acts of: detecting a change in the resonant frequency of at least one of the resonant coils in the array resulting from the presence of the body”; [See col. 4 line 66 through column 5 line 17] “and determining at least one electromagnetic property of at least one region of the body from the change in the resonant frequency of the at least one resonant coil.” [See col. 4 line 44 through column 5 line 17; See figures 1a, 1b, 8, 13 with their respective accompanying description, and the abstract]

8. With respect to **Claim 61 Mills**, shows with respect to figures 1 through 13 and their accompanying description within the Mills disclosure “An apparatus for determining one or more properties” (i.e. such as magnetic susceptibility, external or internal resonant frequency shift, Larmor frequency shift, etc.) “of a body,” (i.e. of a patient or object), “the apparatus comprising: a plurality of coils”, (i.e. an array of miniature RF antennas / detectors) [See col. 4 lines 11-25; col. 2 lines 43-48] “each of the plurality of coils” [See figures 1a, 1b, 8, 13 and accompanying description] “having one or more

resonant properties including a resonant frequency at which the respective coil was configured to resonate; (i.e. a Larmor frequency) [See col. 5 lines 4-17], “a first component coupled to the plurality of coils and adapted to provide at least one measurement of the plurality of coils indicative of a change in the resonant frequency of at least one of the plurality of coils resulting from the presence of the body; [See col. 4 line 66 through column 5 line 17; figures 1,a, 1b, 8, and 13] “ and a second component coupled to the first component to receive the at least one measurement, the second component adapted to determine at least one electromagnetic property of at least one region of the body based on the change in the resonant frequency.” [See col. 4 line 44 through column 5 line 17; See figures 1a, 1b, 8, 13 with their respective accompanying description, and the abstract]

9. With respect to method **Claim 3** and **corresponding apparatus claim 63, Mills**, teaches that “the act of determining the at least one electromagnetic property includes an act of determining at least one of a conductivity, a permittivity, and a permeability of the at least one region of the body.” [See column 2 lines 49 through column 3 line 2; column for line 46 through 65; column 15 lines 42-64; column 20 lines 1-16 and equation 22; and column 13 line 22.] The same reasons for rejection, which apply to **claims 1, 61** also apply to **claims 3, 63** and need not be reiterated.

10. With respect to method **Claim 4** and **corresponding apparatus claim 64, Mills**, teaches that “the act of determining the at least one electromagnetic property includes an act of determining at least one of a magnitude, a direction, and a phase of an electric field at the at least one region of the body”. [See column 18 lines 28 through column 19 line 9, along with equations 16 through 19, where the vector potential $A(x)$ is directional, along a particular angle ϕ , and the magnitude of precession M is a maximum which decays with time. The Examiner notes that the specific electrical field calculation is given by equation 18. An additional way of expressing the vector potential is also given by equation 19. Specifically see column 18 lines 46 through column 19 line 9.]] The same reasons for rejection, which apply to **claims 1, 61** also apply to **claims 4, 64** and need not be reiterated.

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11. With respect to method **Claim 5** and **corresponding apparatus claim 65**, **Mills**, teaches that “the act of determining the at least one electromagnetic property includes an act of determining at least one of a magnitude, a direction, and a phase of a magnetic field” (i.e. component B) “at the at least one region of the body.” [See column 17 lines 55 through column 23 line 56; see also equations 17, 19-24; figures 9 through 12; Additional exemplary teachings are also found in column 3 lines 3-21; column 11 line 66 through column 12 line 34; column 12 lines 58 through column 13 line 37; column 26 lines 5-27; and column 28 lines 42-55.] The same reasons for rejection, which apply to **claims 1, 61** also apply to **claims 5, 65** and need not be reiterated.

12. With respect to method **Claim 6** and **corresponding apparatus claim 66**, **Mills**, teaches an act of “forming an image having a plurality of voxels, each voxel of the plurality of voxels having an intensity related to a respective one of the at least one electromagnetic property (i.e. the magnetic susceptibility). [See the abstract, column 3 lines 3-21; column for lines 3-25; column 8 line 49 through column 10 line 21; column 13 line 38 through column 14 line 23; column 17 lines 29-55; column 21 line 39 through column 22 line 67; and column 30 lines 5-49]. The same reasons for rejection, which apply to **claims 1, 61** also apply to **claims 6, 66** and need not be reiterated.

13. With respect to method **Claim 7** **Mills**, teaches “measuring at least one property of the array of coils” (i.e. magnetic susceptibility) “indicative of the change in the resonant frequency” (i.e. a change in the Larmor frequency) “of the at least one resonant coil”. [See column 8 line 5 through column 10 line 21; column 19 lines 23-62; column 21 lines 39 through column 22 lines 67; column 30 line 50 through column 31 line 22.] The same reasons for rejection, which apply to **claim 1** also apply to **claim 7** and need not be reiterated.

14. With respect to method **Claim 8** and **corresponding apparatus claim 67**, **Mills**, teaches measuring an impedance characteristic of at least one of the plurality of resonant coils in the array as a result of operating the at least one of the plurality of resonant coils. [See column 12 lines 35-57; column 20 lines 27-33; column 56 lines 26 through 54] The same reasons for rejection, which apply to **claims 1, 7, 61, 67** also apply to **claims 8, 67** and need not be reiterated.

15. With respect to method **Claim 9** and **corresponding apparatus claim 68**, **Mills** teaches, an act of obtaining a measured impedance matrix of the array of coils. [See the impedance matching up the array component 120 of figures 1a, which is also taught in column 12 lines 35-57; column 20 lines 27-33; column 56 lines 26 through 54. The Examiner notes that the array matrix, is a set of matrices is taught in calm 56 lines 41-50]. The same reasons for rejection, which apply to **claims 1, 7, 8, 61, 67** also apply to **claims 9, 68** and need not be reiterated.

16. With respect to method **Claim 10** and **corresponding apparatus claim 69**, **Mills**, teaches obtaining at least one / a plurality of scattering parameters (S-parameters) of the array of coils” because the Magnetic susceptibility parameters which define and determine how the electromagnetic field fluctuates in space, represent a plurality of electromagnetic field scattering parameters.” [See the entire disclosure of **Mills** with respect to magnetic susceptibility and the parameters used to define, determine and measure it in the **Mills** reference. See also the abstract, figures 1a-13; col. 2 line 26 through col. 81 line 48.] The same reasons for rejection, which apply to **claims 1, 7, 8, 9, 61, 67, 68**, also apply to **claims 10, 69** and need not be reiterated.

17. With respect to **Claim 11 Mills**, teaches and shows from figures 1a and figure 8 by means of the drive mechanism” (i.e. component 122) and the electrical connection shown” (i.e. in figure 1a) the step of “operating at least one of the plurality of resonant coils” (i.e. component 120) “by providing at least one electrical stimulus” (i.e. the RF excitation provided to the detector coils is one electrical stimulus, and the electrical current which moves the coils of the array 120 is another electrical stimulus) “to the at least one of the resonant coils in the array” which moves the detectors 120 in a direction perpendicular to the plane of the detectors, i.e. along the y-axis, to sample the external RF field over a three dimensional volume [See column 12 lines 10 to 34] The same reasons for rejection, which apply to **claims 1, 7** also apply to **claim 11** and need not be reiterated.

18. With respect to **Claim 12 Mills**, teaches “operating at least one of the plurality of resonant coils” (i.e. component 120) “by providing at least one of a current and a voltage to the at least one of the plurality of resonant coils” (i.e. component 120) “, and

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wherein measuring the at least one property of the array of coils” (i.e. component 120) “includes measuring at least one property” (i.e. magnetic susceptibility) “indicative of the change in the resonant frequency of at least one of the plurality of resonant coils as a result of operating the at least one of the plurality of resonant coils. [See the abstract, figure 13, figure 8, figure 1a and the teachings of col. 20 line 27-65; col. 19 line 44 through col. 20 line 31; col. 29 line 64 through col. 32 line 46]. The same reasons for rejection, which apply to **claims 1, 7, 11** also apply to **claim 12** and need not be reiterated.

19. With respect to **Claim 13 Mills**, teaches providing an electrical stimulus” [See column 12 lines 10 to 34] “having a range of frequencies” [See column 19 line 44 through column 20 line 65] “to the at least one of the plurality of resonant coils” (i.e. component 120], “and wherein the act of measuring the at least one property includes an act of measuring at least one S-parameter” (i.e. scattering parameter) “of the array of coils as a result of operating the at least one of the plurality of resonant coils.” because the Magnetic susceptibility parameters which define and determine how the electromagnetic field fluctuates in space, represent a plurality of electromagnetic field scattering parameters. [See the entire disclosure of **Mills** with respect to magnetic susceptibility and the parameters used to define, determine and measure it in the **Mills** reference. See also the abstract, figures 1a-13; col. 2 line 26 through col. 81 line 48.] The same reasons for rejection, which apply to **claims 1, 7, 11** also apply to **claim 13** and need not be reiterated.

20. With respect to **Claim 14 Mills**, teaches “measuring a voltage in the at least one other of the coils in the array. [See col. 31 line 62 through col. 32 line 46 as one example of this teaching in the Mills reference]. The same reasons for rejection, which apply to **claims 1, 7, 11, 13** also apply to **claim 14** and need not be reiterated.

21. With respect to **Claim 15 Mills**, teaches “ providing the electrical stimulus” [See column 12 lines 10 to 34] “in one of the coils in the array and measuring the at least one property” (i.e. magnetic susceptibility) “ in each of the coils in the array. [See column 12 lines 10-34; the abstract, figure 13, figure 8, figure 1a and the teachings of col. 20 line 27-65; col. 19 line 44 through col. 20 line 31; col. 29 line 64 through col. 32 line 46; col.

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56 lines 31-54, Figure 13] The same reasons for rejection, which apply to **claims 1, 7, 11, 13** also apply to **claim 15** and need not be reiterated.

22. With respect to method **Claim 16** and **corresponding apparatus claim 75, Mills**, teaches “measuring a plurality of S-parameters” (i.e. such as current or voltage or magnetic susceptibility) “in part by producing a current in each of the coils in the array and measuring a voltage in each of the coils in the array, respectively, in response to the current. [See the abstract, figure 13, figure 8, figure 1a and the teachings of col. 20 line 27-65; col. 19 line 44 through col. 20 line 31; col. 28 lines 42-55; col. 29 line 64 through col. 32 line 46] The same reasons for rejection, which apply to **claims 1, 7, 11, 13, 15, 61, 68** also apply to **claims 16, 75** and need not be reiterated.

23. With respect to **Claim 17 Mills**, teaches “obtaining a measured impedance matrix formed from the plurality of S- parameters.” [See col. 20 lines 27-65] The same reasons for rejection, which apply to **claims 1, 7, 11, 13, 15, 16** also apply to **claim 17** and need not be reiterated.

24. With respect to method **Claim 18** and **corresponding apparatus claim 76, Mills**, teaches “computing a trial impedance matrix from trial values of at least one of conductivity, permittivity and permeability for the at least one region of the body. [See col. 19 line 23 through col. 32 line 46 with col. 4 lines 46-65 as one example.] The same reasons for rejection, which apply to **claims 1, 7, 8, 61, 68** also apply to **claims 18, 76** and need not be reiterated.

25. With respect to method **Claim 19** and **corresponding apparatus claim 77, Mills**, teaches “computing values of the trial impedance matrix by solving Maxwell's equations” [See col. 178 line 47] with the trial values”. See col. 19 line 23 through col. 32 line 46 with col. 4 lines 46-65 as one example; as well as all of the various equations drawn from the Maxwell equations found throughout the entire **Mills** disclosure.] The same reasons for rejection, which apply to **claims 1, 7, 8, 18, 61, 68, 76** also apply to **claims 19, 77** and need not be reiterated.

26. With respect to corresponding **Claim 20**, and **corresponding claim 78: Mills** shows the factors and parameters of the equation of this claim, via the numerous mathematics, equations, and array calculations set forth in the disclosure of col. 2 line

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27 through col. 86 line 55 and figure 13 which teach the same principles in a long explanatory dissertation of mathematics. The same reasons for rejection, which apply to **claims 1, 7, 8, 18, 19, 61, 68, 76** also apply to **claims 20, 78** and need not be reiterated.

27. With respect to **Claim 21 Mills**, teaches from the disclosure section of Finite detector length, and the mathematics of the disclosure, the limitation of “computing the trial impedance matrix includes employing a finite difference time domain (FDTD) simulation of a model of the array and the body to compute a plurality of currents flowing in a plurality of coils in the array in response to a plurality of voltages and computing impedance characteristics from the plurality of currents and the plurality of voltages.” [See col. 57 line 6 through col. 81 line 14; and Figure 13.] The same reasons for rejection, which apply to **claims 1, 7, 8, 18, 19** also apply to **claim 21** and need not be reiterated.

28. With respect to method **Claim 22** and **corresponding apparatus claim 79, Mills**, teaches ““comparing the trial impedance matrix with the measured impedance matrix”, from the teachings of col. 20 line 27-65; col. 19 line 44 through col. 20 line 31; col. 29 line 64 through col. 32 line 46; col. 56 lines 31-54, Figure 13]. The same reasons for rejection, which apply to **claims 1, 7, 8, 18, 61, 68, 76** also apply to **claims 22, 79** and need not be reiterated.

29. With respect to method **Claim 23** and **corresponding apparatus claim 80, Mills**, teaches “reducing a distance between the trial impedance matrix and the measured impedance matrix.” because **Mills** measures impedance for each of the antennas of the array in terms of detected signal voltage and brings the estimated and actual resulting voltages together. [See the teachings of col. 20 line 27-65; col. 19 line 44 through col. 20 line 31; col. 29 line 64 through col. 32 line 46; col. 56 lines 31-54] The same reasons for rejection, which apply to **claims 1, 7, 8, 18, 19, 21, 61, 68, 76, 79** also apply to **claims 23, 80** and need not be reiterated.

30. With respect to method **Claim 24** and **corresponding apparatus claim 81, Mills**, teaches “iteratively updating the trial impedance matrix by updating trial values that decrease the distance from the measured impedance matrix to provide a final trial

impedance matrix.” [See the mathematical formulas provided throughout this reference connected with the taught reiterative, (i.e. the iteratively updating) reconstruction method from the teachings of col. 20 line 27-65; col. 19 line 44 through col. 20 line 31; col. 29 line 64 through col. 32 line 46; col. 56 lines 31-54, figure 13] The examiner notes that the formulas are found throughout the text and in the appendices for each of the written described teachings, and not necessarily directly with the teachings themselves. Therefore applicant should refer to all the mathematics provided in the reference connected to the reconstruction algorithm employed by Mills.] The same reasons for rejection, which apply to **claims 1, 7, 8, 18, 19, 21, 23, 61, 68, 76, 79, 80** also apply to **claims 24, 81** and need not be reiterated.

31. With respect to method **Claim 25** and **corresponding apparatus claim 82, Mills**, teaches “determining a least squares distance”. [See the mathematical formulas provided throughout this reference connected with the taught reiterative, reconstruction method from the teachings of col. 20 line 27-65; col. 19 line 44 through col. 20 line 31; col. 29 line 64 through col. 32 line 46; col. 56 lines 31-54, figure 13] The examiner notes that the formulas are found throughout the text and in the appendices for each of the written described teachings, and not necessarily directly with the teachings themselves. Therefore applicant should refer to all the mathematics provided in the reference connected to the reconstruction algorithm employed by **Mills**.] The same reasons for rejection, which apply to **claims 1, 7, 8, 18, 19, 21, 23, 24, 61, 68, 76, 79, 80, 81** also apply to **claims 25, 82** and need not be reiterated.

32. With respect to method **Claim 26** and **corresponding apparatus claim 83, Mills**, teaches “forming an image of the body, the image having a plurality of voxels, each voxel of the plurality of voxels having an intensity based on corresponding trial values used to compute the final trial impedance matrix.” [See col. 25 line 30 through col. 32 line 46; figures 8, 1a, 1b] The same reasons for rejection, which apply to **claims 1, 7, 8, 18, 19, 21, 23, 24, 61, 68, 76, 79, 80, 81** also apply to **claims 26, 83** and need not be reiterated.

33. With respect to method **Claim 27** and **corresponding apparatus claim 84, Mills**, teaches “providing a model of the array of coils and the body.” [See figures 1a,

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1b] The same reasons for rejection, which apply to **claims 1, 7, 8, 61, 68** also apply to **claims 27, 84** and need not be reiterated.

34. With respect to method **Claim 28** and **corresponding apparatus claim 85**, **Mills** teaches, “logically partitioning a volume of space including at least a portion of the body into a plurality of regions.” [See figure 12] The same reasons for rejection, which apply to **claims 1, 7, 8, 27, 61, 68, 84** also apply to **claims 28, 85** and need not be reiterated.

35. With respect to method **Claim 29** and **corresponding apparatus claim 86**, **Mills**, teaches “assigning at least one of a conductivity value, a permittivity value, and a permeability value to each of the plurality of regions.” [See col. 4 lines 46-51] The same reasons for rejection, which apply to **claims 1, 7, 8, 27, 28, 61, 68, 84, 85** also apply to **claims 29, 86** and need not be reiterated.

36. With respect to method **Claim 30** and **corresponding apparatus claim 87**, **Mills**, teaches “The method of claim 29, wherein the act of determining at least one electromagnetic property includes an act of computing a trial impedance matrix from the assigned conductivity, permittivity and permeability values according to the model”. [See col. 4 lines 46-51 where permeability different than free space is defined as magnetic susceptibility, and see the teachings of col. 20 line 27-65; col. 19 line 44 through col. 20 line 31; col. 29 line 64 through col. 32 line 46; col. 56 lines 31-54, Figure 13]. The same reasons for rejection, which apply to **claims 1, 7, 8, 27, 28, 29, 61, 68, 84, 85, 86** also apply to **claims 30, 87** and need not be reiterated.

37. With respect to method **Claim 31** and **corresponding apparatus claim 88**, **Mills**, teaches “The method of claim 30, wherein the act of determining at least one electromagnetic property includes an act of reducing a distance between the trial impedance matrix and the measured impedance matrix by iteratively adjusting trial values of the assigned conductivity and permittivity values.” because he adjusting the magnetization voltages detected by each voxel. [See col. 4 lines 46-51 where permeability different than free space is defined as magnetic susceptibility, and see the teachings of col. 20 line 27-65; col. 19 line 44 through col. 20 line 31; col. 29 line 64 through col. 32 line 46; col. 56 lines 31-54, Figure 13]. The same reasons for rejection,

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which apply to **claims 1, 7, 8, 27, 28, 29, 30, 61, 68, 84, 85, 86, 87** also apply to **claims 31, 88** and need not be reiterated.

38. With respect to method **Claim 32** and **corresponding apparatus claim 89, Mills**, teaches “The method of claim 31, wherein the act of computing the trial impedance matrix includes an act of performing a finite difference time domain simulation of the model.” [See figures 1c through figure 7, as examples with their corresponding description in the Mills disclosure. See also the plotting of the results col. 32 lines 43-46]. The same reasons for rejection, which apply to **claims 1, 7, 8, 27, 28, 29, 30, 31, 61, 68, 84, 85, 86, 87** also apply to **claims 32, 89** and need not be reiterated.

39. With respect to **Claim 70 Mills**, teaches and shows “the first component includes at least one of a matching circuit and a network analyzer. See figures 1a, 1b, 8, 13 and the written description with respect to each of these figures.] The same reasons for rejection, which apply to **claims 1, 61**, also apply to **claim 70** and need not be reiterated.

40. With respect to **Claim 71 Mills**, teaches and shows “comprising a third component” (i.e. one of components 112, 118, 122) which assist in providing “a current in at least one of the plurality of coils” (i.e. component 120) “and the first component” (i.e. such as the matching circuitry of figure 13) is adapted to measure the at least one property” (i.e. magnetic susceptibility, impedance, voltage, change in frequency) in at least one of the plurality of coils in response to the current. [See the abstract, figure 13, figure 8, figures 1a, 1b and the teachings of column 12 lines 10-34; col. 20 line 27-65; col. 19 line 44 through col. 20 line 31; col. 28 lines 42-55; col. 29 line 64 through col. 32 line 46] The same reasons for rejection, which apply to **claims 1, 61, 68, 69** also apply to **claim 71** and need not be reiterated.

41. With respect to **Claim 72 Mills**, shows “the third component includes an radio frequency (RF) power source” [See RF generator 118 of figures 1a, 1b, and the RF control 18 of figure 8.] The same reasons for rejection, which apply to **claims 1, 61, 68, 69, 71** also apply to **claim 72** and need not be reiterated.

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42. With respect to **Claim 73 Mills**, teaches and shows “the wherein the first component is adapted to measure a voltage in the at least one of the plurality of coils in response to the current. [See the abstract, figure 13, figure 8, figures 1a, 1b and the teachings of column 12 lines 10-34; col. 20 line 27-65; col. 19 line 44 through col. 20 line 31; col. 28 lines 42-55; col. 29 line 64 through col. 32 line 46] The same reasons for rejection, which apply to **claims 1, 61, 68, 69, 71** also apply to **claim 73** and need not be reiterated.

43. With respect to **Claim 74 Mills**, teaches and shows wherein the first component is adapted to measure an S parameter (i.e. such as magnetic susceptibility, external or internal resonant frequency shift, Larmor frequency shift, etc.,) of the at least one of the plurality of coils (i.e. coil array 120)” at a plurality of frequencies”. [See column 12 lines 10-34; col. 20 line 27-65; col. 19 line 44 through col. 20 line 31; col. 28 lines 42-55; col. 29 line 64 through col. 32 line 46] The same reasons for rejection, which apply to **claims 1, 61, 68, 69, 71, 73** also apply to **claim 74** and need not be reiterated.

44. With respect to **apparatus claim 90, Mills**, teaches and shows “in the appendices of the Disclosure, the text of col. 11 line 34 through col. 82 line 14, and the exemplary reconstruction program of column 42 through 54 of the Mills Disclosure that the second component includes: “at least one computer readable medium encoded with instructions; and at least one processor coupled to the at least one computer readable medium, the at least one processor configured to execute the instructions.” [See also figures 1a, 1b, and 8, which show the different computational processors 20, 126, 226, and 228] The same reasons for rejection, which apply to **claims 1, 61**, also apply to **claim 90** and need not be reiterated.

Prior Art

45. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

***A)** **Sekihara et al.**, US patent 5,426,365 issued June 20th 1995.

B) **Sodickson et al.**, US patent application publication 2006/ 0125475 A1 published June 15th 2006, which is applicant's own publication of the instant application, which is noted for purposes of a complete record only.

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Conclusion

46. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tiffany Fetzner whose telephone number is: (571) 272-2241. The examiner can normally be reached on Monday, Wednesday, and Friday-Thursday from 7:00am to 2:10 pm., and on Tuesday and Thursday from 7:00am to 5:30pm.

47. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Diego Gutierrez**, can be reached at (571) 272-2245. The **only official fax phone number** for the organization where this application or proceeding is assigned is **(571) 273-8300**.

48. Information regarding the status of an application may be obtained from the Patent Application information Retrieval (PAIR) system Status information for published applications may be obtained from either Private PMR or Public PMR. Status information for unpublished applications is available through Private PMR only. For more information about the PMR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PMR system contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/TAF/
December 15, 2009

/Brij Shrivastav/
Primary Patent Examiner
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